

PINGUICULA LOXENSIS (LENTIBULARIACEAE)—A LOST NAME BY HUMBOLDT AND BONPLAND?

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Early botanical explorers journeyed to remote and physically challenging places in search of new scientific wonders. However, because of quirks in communication and publication, not all their new discoveries remained discovered! The following is a story of how a species of *Pinguicula* was found in the early 1800s, just to be lost in the seas of literature. It is only now, after nearly 200 years, that the discovery has been refound and rescued.

The expedition to South America and Central America in 1799–1804 by Friedrich Heinrich Alexander von Humboldt (1769–1859) and Aimé Jacques Alexandre Goujaud Bonpland (1773–1858) was the most important ever made to America. The long and arduous journey into regions then little known is “surely one of the most remarkable and fruitful in the whole history of scientific exploration” (Stearn, 1968). The travelers amassed an immense quantity of botanical, zoological, geological, geographical, historical and political specimens and observations, which formed their famous and well-illustrated *Voyage aux Régions équinoxiales du Nouveau Continent*. This account was published shortly after the completion of the expedition (1805–1835 [1837]).

From the standpoint of taxonomy, the botanical collection from this expedition—more than 6,000 specimens now mostly deposited in the Paris Muséum National d’Histoire Naturelle—is also the most important ever made for tropical America. Most of the 3,600 new American species that resulted from the expedition were published in the monumental seven-volume *Nova Genera et Species Plantarum* (1816–1826) by Karl Sigismund Kunth (1788–1850); the authors of these species are familiar to botanists by their initials “H.B.K.”, which stands for Humboldt, Bonpland and Kunth. For the details of the collections see Stearn (1968), and of the publications see Fiedler & Leitner (2000).

The contemporaries were especially amazed about the *Relation historique du Voyage aux régions équinoxiales du Nouveau Continent* (1814–1825), the “story” of the journey. Humboldt’s vivid, imaginative and humorous style let the reader virtually join the travelers and participate in the adventurous and difficult journey. The story is incomplete—volume 4 was to contain the second part of the expedition through the Andean region, but it was never published. As such, the account ends with the arrival of the group in Barcelona (Venezuela).

The second part of the expedition led across Cuba to Cartagena (Colombia) and along the Andean mountain range southward via Quito (Ecuador) to Lima (Peru). On the way Humboldt and his companions passed many volcanoes, which they ascended. Humboldt’s account in his journey diary culminates in the description of the ascent of the Andean volcano Chimborazo, in those days reputed to be the world’s highest mountain. Its summit is about 6,310 meters, or 20,700 feet.

On 23 June 1802, Humboldt, Bonpland, and their companions ascended Mount Chimborazo slopes to an elevation that Humboldt recorded to be 5,881 m. However,

his monitoring equipment was apparently inaccurate, a more recent estimate their highest point on the slope of Mt. Chimborazo is about 5,350 m (Faak 1974: 39) or 5,500 m (McIntyre 2000: 228). The group did not reach the summit because of the hostile nature of the conditions on the mountainside (snowfields and extreme cold) and the insufficient general fitness and gear of most of the mountaineers. Humboldt wrote in his journey diaries (in extracts published by Faak 1990: 220; German ed., translated by me), that "...symptoms of asthenia were induced by the lack of oxygen...and the thinner air in the higher regions....We climbed for another half an hour. It became so misty that we could not see the summit." Afterwards, we read (Faak 1990: 220) that he found comfort: "...looking through the telescope we have seen that the summit consists of nothing else than snow". Therefore, they resolved to turn back and climb down to the foot of the volcano.

For its time, the ascent of Mt. Chimborazo was extraordinary—it was certainly one of the scientific and emotional highlights of the journey—and news of it echoed around the globe (cf. the report of Delambre to Napoléon Bonaparte in Paris; Bertuch, 1808). We feel a touch of irony when reading the Galletti-howler¹ nr. 439 (Minkowski, 1966: 86): "When Humboldt was climbing the Chimborazo the air was so thin that he could no longer read without his spectacles." ("Als Humboldt den Chimborasso bestieg, war die Luft so dünn, daß er nicht mehr ohne Brille lesen konnte.")

Following this famous, legendary adventure, Humboldt and his companions went southward along the mountain range from Riobamba by way of Tixán, Azuay, Cuenca, Cumbe, Nabón, Oña and Saraguro to Loxa [Loja]. "This mountain range of Saraguro...is among the most beautiful and richest in plants we have ever seen. We covered the whole distance by foot in two days, loaded with plants and wallowing in the mire to the knees. In the early morning of July 23 we arrived at Loxa..." (Faak, 1990: 237).

On this part of the trip, Humboldt and his friend Bonpland found a small violet flowered butterwort, which Bonpland described in detail as a "pinguicula" in the hand-written *journal botanique* on fol. 136 (ms. 53, no. 3319; now in the Paris National Museum d'Histoire Naturelle; see for the whole question of the *journal botanique* Loureig, 1977). He did not supply a species epithet, but indicated the habitat "...In sylvis propé Saraguro". Later on, another person (Kunth?!) added, in the space left blank behind the name "pinguicula", the epithet *calyptrata*.

In the botanical description of *Rhexia reticulata* (Melastomataceae) found "in montibus Saraguru frigidis, prope Loxam" (Bonpland, *Monographies des Mélastomes ... Voyage ... Part VI, Sect. 2, 1806: 22*) we read: "1. La Rhexie croît spontanément dans la montagne de Saraguru près la ville de Loxa...à 2,000 mètres d'élévation sur le niveau de la mer..." and "2. Avec plusieurs espèces de Weinmannia, la *Rhexia réticulée* fait le fonds de la végétation dans cette partie des Andes; on y trouve aussi quelques espèces arborescentes du genre *Aralia*...quelques jolies Gentianes, et le *Pinguicula Loxensis*". The footnote runs as follows: "Voyez cette dernière plante dans le grand tableau qui accompagne l'*Essai sur la Géographie des Plantes*, rédigé par M. de Humboldt." The author of this passage must be Bonpland because Humboldt (1814) wrote in his *Introduction to the Relation historique*: "Of the mentioned works, the second and the third (i.e. the *Plantes équinoxiales*...and *Monographies des Melastomes*...)

¹A howler is a glaringly obvious or ridiculous word blunder, often unintentionally humorous in effect. Johann Georg August Galletti, 1750–1828, teacher at the classical college Augustinum at Gotha, professor in history, historiographer and privy councillor of the principality Gotha, well known with Alexander von Humboldt, is the "father" of the German "Kathederblüten," an anthology of unintentionally queer howlers. Some of them were compiled by his pupils and were first published by August Parthey in Berlin, 1866. The howler regarding Humboldt is a typical example.

have been prepared by Bonpland on the basis of his on-the-spot observations laid down in his botanical diary. This diary contains the methodical descriptions of equinoctial plants; I myself have only written the ninth part of them." (My translation follows the German edition of the *Reise in die Äquinoktial-Gegenden...*(Ette, 1999).)

In the "Naturgemälde..." Humboldt (1807: 67) wrote of the "anmuthigen Tälern um Loxa..., dem Garten der Andesischen Gebirge" ("charming valleys around Loxa..., the garden of the Andean mountain range"). On page 71 we learn: "In an altitude of seventeen hundred metres...occur *Porlieria hygrometrica*, the weather forecasting shrub...*Citrosma* with its aromatic leaves and fruits; *Hypericum baccatum* and *cayennense*....In an altitude of two thousand and six hundred metres and especially in three thousand metres *Acaena*, *Dichondra*, *Nierembergia*, *Hydrocotyle*, *Nerteria* and *Alchemilla* form a thick lawn. This is the region of the *Weinmannia*, the oaks and the *Spermacoce* (sic!)..." And on page 74 we are informed that "...between 2800 and 3800 m...the region of *Wintera grenadensis* and *Escallonia* lies. These inhospitable regions (which the Spaniards name Paramos because of the everlasting slushy-moist cold) are covered with shrubby bushes...some Rhexies and Melastomes lose themselves in these wilderness..*Alstonia*...*Escallonia tubar*, and some *Andromeda* species shade low Lobelias, Baselles and...*Swertia quadricornis*...(p. 75). To the region of *Escallonia* adjoins directly the region of the *alpine herbs*...Here are gregariously growing Gentianes, Staehelines, and *Escallonia frailexon*...and other alpine herbs...."

Considering the Bonpland passages about *Weinmannia* or *Rhexia* we would have expected to detect the name *Pinguicula* or *Pinguicula loxensis* respectively; but Humboldt mentions only species of *Lobelia*, *Sida*, *Ranunculus*, *Ribes*, and *Gentiana* and refers us to descriptions of the other alpine herbs in the following copies.

Yet, we become satisfied: the grand copper plate (see Back Cover), a very impressive idealized profile through the Ecuadorean Andean mountain range with the Chimborazo dominating the scene, shows not only the altitudinal zonation of the vegetation but also the names of a great number of floristic elements. Humboldt described the copper plate in detail and recorded that his "Naturgemälde" should include all the physical phenomena, i.e. the botanical, zoological and meteorological ones between the 10° northern and 10° southern parallels². The names of the plants are printed in letters as tiny as they are far and between. If you scrutinize the often curved binomials, one after another, you will be lucky if you can detect the name *Pinguicula loxensis* on the mid-left of the picture, near *Gunnera*, *Cinchona*, *Viburnum*, *Quercus grenadensis* and others (see Figure 1). In his first sketch of the profile from 1803 I have detected the mere generic name *Pinguicula* without specific epithet in the altitudinal zone between 1,000 and 1,500 toises. Outside the profile on its right side "Hauteur de Loxa" is added; see also below.

In February 1803, at Guayaquil, Humboldt drafted his "Naturgemälde". Stearn (1960) postulates Humboldt would have drafted his *Essai*... (see below) in 1802 "at the foot of Mount Chimborazo". But this statement contradicts Humboldt's own remarks in the German edition in which we read: "Ich habe die erste Skizze dieser Arbeit...im Hafen von Guayaquil entworfen im Februar 1803, als ich von Lima zurückkehrte." (i.e. "I have drafted the first sketch of this work...in the harbour of Huayaquil [Guayaquil] in February 1803, when I returned from Lima.") Proof of the correctness

²Humboldt drafted his *Essai*... and the huge chart 1803 in Guayaquil (Ecuador) and elaborated it in Paris with help of the apt draughtsman Lorenz Adolf Schönberger. He added the copperplate print (engraved by Louis Bouquet, coloured in some but not all copies) entitled *Tableau physique*... (in the French editions) or *Naturgemälde der Tropenländer* (in the German editions). The sections *Tableau physique*...or *Naturgemälde* respectively, he regarded as the summary of his and Bonpland's observations in the Andean Region of South America!

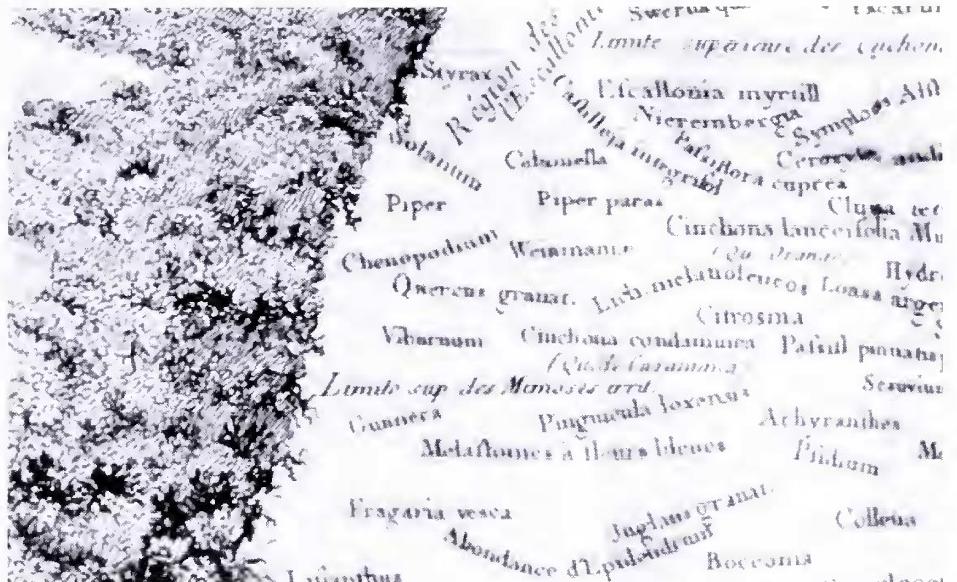


Figure 1: A detail from the figure on the Back Cover, showing the words “*Pinguicula lorenensis*” more clearly, here at the central, lower portion of the figure.

of Humboldt's note is the existence of the coloured hand-written first sketch believed to be lost. It is entitled "Geographie des plantes pres de l'Equateur. Tableau physique des Andes et pais voisins, dresse sur les observations et mesures sur les lieux en 1799-1803"; see Beck & Hein 1989: 28ff; pl. 1. The difficulty of preparing and engraving the huge, detailed chart delayed publication at Paris until 1807; a preliminary lecture to the Institut de France was held and a corresponding edition dedicated to Antoine Laurent du Jussieu and René Desfontaines was delivered in January 1805, some of the copies dated 1805, others 1807 (Stearn 1960; cf. Fiedler & Leitner 2000).

Humboldt finished his famous work, *Essai sur la Géographie des Plantes*, accompagné d'un tableau physique des régions équinoxiales... one of the few classics in botanical literature, the landmark of plant geography as a scientific discipline, at Paris in 1807. He recorded the altitudinal zonation of the vegetation on the basis of his "Reisetagebücher" ("journey diaries"; now in Berlin, Berlin-Brandenburgische Akademie der Wissenschaften) and Bonpland's and his *journal botanique* and barometric measurements. Today it decorates the cover of the *Catalogue of the vascular plants of Ecuador* (Jørgensen & León-Yánez, 1999), and the cassette of the recent two-volumed German edition entitled *Alexander von Humboldt, Reise in die Äquinoktial-Gegenden des Neuen Kontinents* (Ette, 1999).

This story confirms the saying "We see what we know", i.e. without having previously read Bonpland's above mentioned note on *Weinmannia* and *Rhexia reticulata*, I would probably not have discovered the hidden but unequivocal hint on the copper-plate at the Humboldt-Bonpland *Pinguicula*. I could not find any other note about *Pinguicula loxensis* in the whole work of the *Voyage*...

The rare copper plate loosely adjoined to the *Essai...* and often enclosed in a separate case was, in the German edition, entitled "Geographie der Pflanzen in den Tropen-Ländern; ein Naturgemälde der Anden. Gegründet auf Beobachtungen und Messungen, welche vom 10ten Grade nördlicher bis zum 10ten Grade südlicher Breite angestellt worden sind, in den Jahren 1799 bis 1803. Von Alexander von Humboldt und A.G. Bonpland." This edition was dedicated to Goethe (*An Göthe*) with a vignette painted by Thorwaldsen and engraved by Massard. It symbolizes the unification of poetry, philosophy and natural history: Apollo, personified by the statue of

Goethe, unveils the mystery of nature, the “Great Mother”, personified by the statue of the goddess Diana of Ephesus with her breasts of wisdom (also known as Artemis multimmamnia) (Beck & Hein, 1989; Nickel, 2000).

Why did Kunth (1817/1818) not adopt the Loxa name when dealing with *Pinguicula* for his “*Nova Genera et Species...*”? As Humboldt *expressis verbis* writes (“*Naturgemälde*”, p.56): “On the basis of the journals of our expeditions we are able to indicate for nearly every collected plant parallel site, maximum and minimum of altitude, temperature of the air, character of the ground etc.” But in the special case of *Pinguicula loxensis* his remark is not quite right: in the *Journal botanique* we find an Andean *Pinguicula* but no species name from Bonpland’s or his hands (see above).

Kunth obviously passed over Bonpland’s and Humboldt’s printed name. Maybe, he did not have easy access to the relevant notes or observations of Humboldt and Bonpland, nor Bonpland’s *Monographies des Melastomes* (1806), nor Humboldt’s *Essai...* [although I cannot believe this]. He created the new name *Pinguicula calyprata* for the already named Loxa [Loja]-plant. The type voucher at P shows only three handwritten elements: the name “*P. calyprata*,” the number “3319” and the locality “Loxa.” (I do not want to discuss the possible synonymy with *P. involuta* Ruiz et Pav.)

Since then, the “original” name *P. loxensis* (today only a *nomen nudum*) has been totally lost in the floristic literature of Ecuador and Peru and in the systematics of *Pinguicula* overall.

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